

10. Activities of Rokkasho Research Centre

At Rokkasho village in Aomori prefecture, the facilities have been constructed of 1) International Fusion Energy Research Centre (IFERC), consisting of three sub projects; DEMO Design and R&D Coordination Centre, Computational Simulation Centre (CSC), and ITER Remote Experimentation Centre (REC), and 2) International Fusion Materials Irradiation Facility/Engineering Validation Engineering Design Activities (IFMIF/EVEDA). The related activities are shifting from the preparatory research phase to the real research phase. The roles of the Rokkasho Research Centre of NIFS are to assist NIFS and universities to cooperate with those activities, and to prepare the environment for promoting various collaborative researches including technology between activities at Rokkasho and universities. As cooperation activities, the head of the Rokkasho Research Centre of NIFS is undertaking jobs as the IFERC project leader, and the Rokkasho Research Center of NIFS has been moved at the end of March 2011 from the original location to inside of the JAEA Aomori Research and Development Center, where IFERC is located.

The mission of IFERC is to contribute to ITER and to an early realization of the DEMO reactor, and so IFERC implements the following 3 sub-projects; DEMO Design and R&D Coordination Centre, Computational Simulation Centre (CSC), and ITER Remote Experimentation Centre (REC). The mission of DEMO Design and R&D Coordination Centre is to coordinate scientific and technological DEMO activities required in DEMO Design, and the practical contents are to hold seminars and meetings, and to present or exchange scientific and technological information, and to perform activities on DEMO conceptual Design and on R&D of DEMO technology. The mission of CSC is to provide a state-of-the-art supercomputer and to exploit high performance and large-scale fusion simulations, and the practical contents are to introduce the high performance computer and to exploit high performance and large-scale simulations on plasmas, fusion materials and technology, in order to analyse experimental results, to prepare ITER operational scenario, to predict ITER performance, to contribute to DEMO design physics and to BA activities. In the case of REC, the mission is to perform ITER remote experiments and verify the functions, and the practical contents are to prepare the ITER Remote Experiment Room and connection of network to verify the function by using JT-60SA and others from 2012.

IFERC project progresses on time; the DEMO Design Activity entered the joint work stage, phase Two-A under the Integrated Project Team (IPT), consisting of DEMO Design unit of IFERC Project Team and JA-EU home teams, and the plan of the safety research of fusion plants has been approved by the BA Steering Committee (SC) at the 11th SC meeting (SC-11) on 23 April 2013. The DEMO R&D activities for the five areas (T1: SiC_f/SiC composites, T2: Tritium technology, T3: Material engineering, T4: Advanced Neutron multiplier, T5:

Advanced Tritium breeders) have progressed almost as planned in the Work Programmes 2012 and 2013 as well as Procurement Arrangements (PAs). The first press release was issued regarding the fabrication technology of an advanced neutron multiplier material (beryllide). The peer review has been implemented, and it is pointed out that the performed and planned DEMO R&D activities are in line with the original objectives, that most of the goals defined in the tasks included in the signed PAs have been reached and that the future activities are, in most cases, a logic continuation of these tasks. Four areas of research newly proposed by JA Implementing Agency have been recognized as valuable activities. The updated plan for DEMO R&D activities reflecting the peer review results was approved at SC-11. The CSC activity has progressed in full accordance with the project plan and with the schedule of the PA related to the CSC. “Steady working acceptance” was signed on December 22, 2012. The performance of the supercomputer, Helios, is 1.237 PF in the Linpack test and the operation started from January 2012. After the Lighthouse Project from January to March 2012, the 1st cycle of the regular simulation projects was implemented from 9 April to 14 November 2012 under the cooperation of CSC and HPC support team and the Standing Committee. The 2nd cycle is ongoing up to 14 November 2013. The Preparatory Working Group (PWG) has created the “Overall Plan of REC” in collaboration with the STP project, and the “Overall Plan of REC” has been approved at SC-11. The IFERC inner network is being enhanced for better performance, redundancy and flexibility for extension. The access line between the IFERC network at the Rokkasho site and the Data Center of SINET 4 in Hirosaki-city has been updated with a 10 Gbps dedicated line from October 2012.

In addition, the Rokkasho Research Centre performs communication works with the organization related to ITER-BA, Aomori prefectural office, and Rokkasho village office, and publicity works to have villagers understand the research of the nuclear fusion. The latter includes the regular exhibition on NIFS and the special exhibition on NIFS once per year

(Nakajima, N.)

